Chuck Buzzle to Retire From Derry WWTF

by Tom White

Chuck Buzzle started work for the Town of Derry in 1973. According to Al Costigan, Derry WWTF Chief Operator, prior to this Chuck had worked in the shoe industry and as a carpenter. Some at the WWTF have heard him tell the story of when he was a youth and was pursuing a career as an egg collector. This job involved collecting the eggs from underneath the hens which resulted in Chuck getting bitten and pecked over and over by the hens. While carrying the two full egg baskets out of the hen house Chuck tripped and fell smashing all of the eggs and this ended Chuck's career as an egg collector. I guess this is why to this day Chuck has not put all his eggs in one basket. Chuck is described by his friends and co-workers as loyal and one to never carry a grudge. Other words used to describe him are always willing to help and to side with a person who is down.

My first meeting with Chuck Buzzle was back in 1988 while still a rookie with the NHDES Operations Section. I was told to get down to the Derry WWTF immediately. A severe odor situation existed there and the press was attempting to capitalize on it. Well, little did I know that on this day I would end up standing on the banks of one of Derry’s giant Wastewater Treatment Lagoons with the Town Mayor May Castin. She was wearing a towel around her face in an attempt to avoid breathing the foul air emitting from the acres of septic sludge exposed on the bottom of this enormous lagoon. The press was standing by snapping pictures and asking me questions that were very hard to answer – attempting to stir things up. At this dire moment of need, I was assisted by a smiling and confident man who calmly and effectively answered the questions from the press thereby temporarily diffusing this situation. It turned out that this gentleman was a seasoned wastewater veteran by the name of Chuck Buzzle – Derry’s WWTF Supervisor, who was also peering down into the smelly sludge abyss. Chuck had already worked out in his own mind the complex causes of this lagoon septic sludge build up and how to go about solving the current crises – the odor problem. We all survived this immediate crises and during the next several months the Town and in particular Chuck Buzzle sorted out the complex causes of the gradual but complete failure of the Lagoon aeration blowers and the plugging of the air distribution system to the lagoons. After carefully examining failed blower parts and sending certain materials and residuals out to a scientific materials lab, Chuck realized that the Lagoon air system failure was not due simply to a lack of maintenance but due in a large part to engineering design errors starting with undersized and inefficient blower air intake filters which allowed air impurities to pass and build up on the blower lobes resulting in low tolerances and excessive blower heat and eventual failure of the aeration blowers. The overheated air, moisture and acids – supposedly designed to clean the air lines – caused chemical reactions on the interior walls of the downstream ductile iron air line which resulted in severe deterioration of the air line. Eventually, fine material plugged the tiny orifices in the plastic air distribution system. With persistence and clean cause and effect data
Coliform and *E. coli* Testing
(2nd of 3 articles)
by Tim Loftus

The first article of this series emphasized that bacteriological testing is not the same as chemical or physical analyses. Specifically, the validity of fecal coliform or *E. coli* results for NPDES reporting purposes is reflected by your Quality Assurance program; not by running spikes, standards, or knowns.

This article will cover certain federally required techniques and procedures needed to produce reportable results.

All analyses for NPDES reporting must follow federal laws as outlined in 40 CFR 136. Approved test methods, collection and preservation techniques are outlined there. It is the final word. Where there is some ambiguity between a test method and 40 CFR, 40 CFR must be followed. An example of this is for bacteriological testing. Federal law allows *Standard Methods for the Examination of Water and Wastewater* 18th edition, method #9222D as one of the methods approved for fecal coliform analysis. In the supporting documentation for this in *Standards Methods* it outlines the preservation and holding time of a sample as follows: “Hold temperature of all . . . samples below 10 C during a maximum transport time of 6 hours. Refrigerate these samples upon receipt in the laboratory and process within 2 hours.” This translates into an 8-hour holding time at a temperature of less than 10 C. But 40 CFR states that preservation is to be at 4 C and the maximum holding time is 6 hours. This is an example where you must follow 40 CFR rather than the information in an approved source.

When sampling for fecal coliform or *E. coli*, use sterilized glass or plastic containers. Do not rinse container with sample before collecting. Also, leave about an inch of headspace in the container to aid in mixing prior to aliquot removal. If there is any residual chlorine, you must dechlorinate with sodium thiosulfate. Note that this is a different dechlorinating agent than that used for dechlorinating BOD samples. Chlorinated BOD samples require sodium sulfite. Do not interchange the two.

Before setting up the equipment for analysis, wipe down the work area using antibacterial cleaning solutions. Always use equipment that has been sterilized at least 25 minutes at 15 psi and 121 C.

Membrane filters and plastic sealing bags, for example, do not stand up to this heat and pressure sterilization process well. It is best to purchase these pre-sterilized where an alternative sterilization process is employed. Also, don’t forget to use aseptic techniques when mixing or transferring samples, rinsing equipment, and preparing samples for incubation. Aseptic techniques are techniques that eliminate or avoid contamination from the target organisms, and include such procedures as flaming the forceps before membrane filter transfers.

Prior to filtering your compliance samples, run a 100 mL buffered dilution water blank through the equipment. At the end of the incubation period, a negative result demonstrates that your equipment was not contaminated. A positive result invalidates the test and a new sample should be analyzed.

Finally, set up several dilutions for each sample. Make sure that the dilutions have a wide enough range so that at least one of these produces 20 to 60 colonies/filter for fecal coliform (20 - 80 for *E. coli*).

Record all the results, including the blank, on your bench sheets.

This article is just an overview of some of the techniques and procedures needed for successfully testing fecal coliform and *E. coli*. For specifics on making buffered dilution water, culture media, and other test procedures, refer to the instructions in your test method.

A third and final article in this series will cover the requirements for reading the results and how to calculate geometric means for NPDES reporting purposes.

The information in this article is based on general test methods that are used throughout the New England area for NPDES monitoring of the fecal coliform group and for *E. coli*. As usual, check your federal, state, and local regulations. You may have additional regulations or reporting requirements that you must meet.

If you have any questions, suggestions, or comments, please contact NEWEA Lab Practices Committee Chair Phyllis Arnold Rand at (207) 782-0917 (prand@gwi.net) or Tim Loftus at (508) 949-3865 (timloftus@msn.com).
Another Look at Unwanted Oils and Grease in Wastewater

Many issues exist with excessive oils and grease plugging lines in the collection systems, causing excessive floating blankets of oil and grease in pump stations, and entering the WWTF only to cause further problems there—possibly Nocardia filaments in the activated sludge. For many years now various products have been used to combat oils and greases from strong acids and alkalies to bacteria and enzymes. Some products work; others do not. I would like to open up some dialogue on this topic to any operators who care to submit information on products that they may be using.

Following is an article about an application in Sunapee where a product is being used to prevent oil and grease build up.

A Six Month Study of Fat and Grease Elimination by PETROTECH 25 in Treatment Plant

Background:
The town of Sunapee, NH conducted a study of the product PETROTECH 25 for the purpose of eliminating fat and grease in a pumping station serving primarily a 114-unit condo development at Granliden on Lake Sunapee.

The pumping station is a wet well, 6 ft. in diameter and 18 ft. deep. When full, the liquid level is 6 ft. in depth. The surface of the cylinder is normally covered with grease varying between 4 to 6 inches. It is estimated that approximately 20% of this grease are of a non-biodegradable material.

The pump station pumps at the rate of 550 gallons per minute twenty-five times per day. Currently, the fat and grease is physically removed every six months.

For the purpose of this study, the Petrotech America Corporation installed a special spraying system to discharge PETROTECH 25 onto the fat and grease surface.

The system was installed on June 14, 2002. The mean temperature of the well was recorded as 55 degrees Fahrenheit.

PETROTECH 25 Product Discharge System:
The Discharge System consists of the product PETROTECH 25, a submersible high-pressure pump, a timing device, a specifically engineered discharge nozzle. The PETROTECH 25 product is diluted in a ratio of 20 to 1 from its concentrate and discharged below frost level.

Study Procedure and Findings:
The flow of PETROTECH 25 was controlled by the timing device and discharged into the wet well 4 times per day. The duration of each discharge was 10 seconds and the amount of product used each day was 3 gallons.

A 70-psi pressure pump provided the force of the discharge. The discharge stream was able to penetrate the fat surface by three-quarters of an inch. This discharge resulted in the fat surface being broken down into irregular “islands” of approximately 4 inches in diameter.

After one week, the non-biodegradable fat solids separated from the fat and it became apparent that an active biodegradation process was underway. It is important to note that during this entire process, new fat and grease were continuously being pumped into the well.

Further observation showed that the fats previously attached to the cylinder wall separated from the wall.

Within a period of 30 days, it was ascertained that of the 50% mass that remained, half was non-biodegradable material.

It was also observed that both the biodegradable and non-biodegradable materials were no longer able to coagulate.

An added benefit is that no odors were now present within the wet wall.

PETROTECH 25 Technology:
The manufacturer of PETROTECH 25 explains the mechanics of the product as a three-step process:

- Physical shear/interaction with the fat and grease; i.e. emulsification
- Chemical process of PETROTECH 25 bonding with the long chain hydrocarbon. The latter is the make up of fat and grease

This bonding process prohibits gases and other light fractions to escape into the atmosphere. Therefore, there is no release of odors, VOC’s and PAC’s

- Total biodegradation of the emulsion by means of the aerobic bacteria. The end product being Biomass, carbon dioxide and water.
Grade III NH Wastewater Treatment Plants  
Salary Survey – December 2002

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<tr>
<th>Location</th>
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<td></td>
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<td></td>
<td>Operator</td>
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<td>Working Foreman</td>
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<td></td>
<td>Operator II</td>
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<td>Laborer</td>
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<tr>
<td>Waterville Valley</td>
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<td>(also responsible for solid waste &amp; recycling)</td>
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<tr>
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CHUCK BUZZLE — Continued from page 1

Chuck was involved in meetings between the Town, the design engineers and the State over several years attempting to sort out the solution to this problem. In the end, Derry was able to purchase and install a modern Biolac air system with state of the art blowers to supply air to the sewage lagoons and this corrected the situation. Many wastewater operators and engineers benefited from this research that Chuck spearheaded. Derry was only one of many WWTF lagoons in New Hampshire with failing fine bubble turbine aeration systems. During this aeration upgrade Chuck shared his information with other WWTF operators at a Lagoon Operators Roundtable held in Derry.

Chuck Buzzle has been invaluable in spreading knowledge among Wastewater operators about all aspects of lagoon operation and maintenance. He opened eyes about claimed versus real aeration equipment oxygen transfer rates in wastewater by demanding that onsite field testing of oxygen transfer rates be run at the Derry Lagoons on any aeration equipment that was considered in the upgrade. “Show me the proof” became Chuck’s motto. He wanted manufacturer’s guarantees on what he purchased and this makes sense.

Chuck also is a wealth of knowledge on process control at the lagoons in particular taking interest in nitrification in WWTF lagoons. He knows the relationship between pH and nitrification.

We will all miss Chuck very much in the wastewater field and wish him the very best in his retirement.
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529-7070
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Keith Gilbert
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WOODARD & CURRAN
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Richard N. Davee, P.E.
(603) 335-2017 • Fax: (603) 335-5437

Aquarion Services Unit Expands Contract Operations Management Team

Wiff Peterson, Senior Vice President of Aquarion Services Company (ASC), announced an expansion of the unit’s management team. Dave Sircle, Steve Bullard, Brent Herring, Check Terry and Richard Althouse recently joined the Company and are based out of the firm’s Londonderry, New Hampshire office. They have joined with Bill Amed, Jack Bonomo, Bill Douglass, Stan Flower and Wiff Peterson; all former Woodard & Curran employees.

Bringing more than 250 years experience in technical operations, maintenance and management of water and wastewater treatment systems this team joins Vice President Len DeJong and Area Manager Jason O’Brien. All are licensed operators in numerous states. Individually they have managed facilities and systems and provided technical services to clients in over thirty states and fifteen foreign countries in water, wastewater and groundwater treatment facilities.

For more information on Aquarion Company and its subsidiaries, please contact us on the internet at www.aquarion.com or www.bhcco.com. Contact Wiff Peterson or any of our new team members named above at (603) 792-0000.
INVITATION TO BID

Sealed proposals will be received at the Manchester Environmental Protection Division, 300 Winston Street, Manchester, New Hampshire until 2:00 p.m., Friday, January 24, 2003, for the sale of the following surplus equipment:

- Two (2) 60 GPM Hydromatic Submersible Sewage Grinder Pumps and Control Panel
- Two (2) 150 GPM Penn Valley Sludge Pumps and Control Panel
- One (1) 500 Gallon Steel Storage Tank
- One (1) 450 KW Waukesha Diesel Generator Set
- Two (2) Gorman Rupp T-10 Pumps, Control Panels and 60 HP Motors
- Two (2) Gorman Rupp T-6 Pumps and 30 HP Motors
- Two (2) Submersible Mixers

Specifications and bid forms are available at the Administration Office of the Environmental Protection Division, 300 Winston Street, Manchester, New Hampshire. Requests for bid forms should be directed to Ms. Denise Vigneault at (603) 624-6595. Bids cannot be faxed. Questions regarding this bid should be directed to Mr. Thomas Scigle, Chief Sanitary Engineer at (603) 624-6341.

The Public Works Director and members of the Manchester Highway Commission jointly and severally, reserve the right to waive any informalities in or to reject any or all bids.

CITY OF MANCHESTER, NH
Department of Highways
Frank C. Thomas, P.E.
Public Works Director